

JAPAN

EDICT OF GOVERNMENT

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JIS C 9335-2-11 (2004) (English): Household and similar electrical appliances -- Safety -- Part 2-11: Particular requirements for tumble dryers

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*The citizens of a nation must
honor the laws of the land.*

Fukuzawa Yukichi

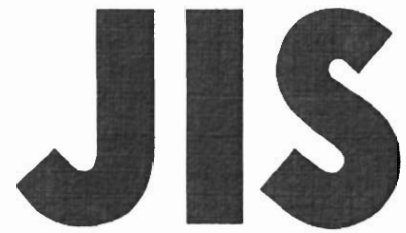
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JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS C 9335-2-11 : 2004

(JEMA)

**Household and similar electrical
appliances—Safety—
Part 2-11 : Particular requirements
for tumble dryers**

ICS 13.120; 97.060

Reference number : JIS C 9335-2-11 : 2004 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Electrical Manufacturer's Association (JEMA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 9335-2-11 : 1999** is replaced with this Standard.

This revision has been made based on **IEC 60335-2-11 : 2002** *Household and similar electrical appliances—Safety—Part 2-11 : Particular requirements for tumble dryers* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Household and similar electrical appliances—Safety— Part 2-11 : Particular requirements for tumble dryers

Introduction This Japanese Industrial Standard has been prepared based on **IEC 60335-2-11** *Household and similar electrical appliances—Safety—Part 2-11 : Particular requirements for tumble dryers* published in 2002 as the sixth edition with some modifications in the technical contents. This is to be read in conjunction with **JIS C 9335-1** : 2003 *Household and similar electrical appliances—Safety—Part 1 : General requirements*.

In this Standard, the portions underlined with dots are the matters modified from the original International Standard. The list of modifications is given in annex 1 (informative) with the explanation being attached.

1 Scope This Standard deals with the safety of electric tumble dryers intended for household and similar purposes, their rated voltage being not more than 250 V for single-phase appliances and 480 V for other appliances.

NOTE 101 This Standard applies to the drying function of washing machines having a drying cycle.

Appliances not intended for normal household use but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms are within the scope of this Standard.

NOTE 102 Examples of such appliances are tumble dryers for communal use in blocks of flats or in launderettes.

As far as is practicable, this Standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 103 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

NOTE 104 This Standard does not apply to

- appliances intended exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

NOTE : The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

IEC 60335-2-11 : 2002 *Household and similar electrical appliances—Safety—Part 2-11 : Particular requirements for tumble dryers* (MOD)

2 Normative references Normative references shall be as stated in clause 2 of **JIS C 9335-1** except as follows.

Addition:

JIS C 9812 *Tumble dryers for household use—Methods for measuring the performance*

IEC 60584-1 *Thermocouples—Part 1 : Reference tables*

3 Definitions For the purpose of this Standard principal definitions in clause 3 of **JIS C 9335-1** is applicable except as follows.

3.1.9 Replacement:

normal operation operation of the appliance under the following conditions

The appliance is operated filled with textile material having a mass in the dry condition equal to the maximum load stated in the instructions.

The textile material consists of pre-washed double-hemmed cotton sheets having dimensions approximately 70 cm × 70 cm and a specific mass between 140 g/m² and 175 g/m² in the dry condition. The textile material is soaked with water having a temperature of 25 °C ± 5 °C and a mass equal to that of the textile material.

If the drying function can automatically follow the washing function in a washing machine, the appliance is not separately loaded. The appliance is operated with the maximum quantity of textile material stated in the instructions for the combined washing-drying cycle.

NOTE 101 Cotton having a water content not exceeding 10 % is considered to be in the dry condition. Cotton conditioned for 24 h in still air, having a temperature of 20 °C ± 2 °C, a relative humidity between 60 % and 70 % and a pressure between 860 hPa and 1 060 hPa, will contain approximately 7 % water.

NOTE 102 The textile material having dimensions approximately 91 cm × 91 cm and a specific mass of 100 g/m² ± 10 g/m² in the dry condition which is specified in **JIS C 9812** may be used.

3.101 tumble dryer appliance in which textile material is dried by tumbling in a rotating drum through which heated air is blown

3.102 condensation-type tumble dryer tumble dryer in which the air used for the drying process is dehumidified by cooling

NOTE : In tumble dryers and condensation-type tumble dryers, dryers having a drum rotating around vertical axis are included, in addition to those having a drum rotating around horizontal axis.

4 General requirement General requirement shall be as stated in clause 4 of JIS C 9335-1.

5 General conditions for the tests General conditions for the tests shall be as stated in clause 5 of JIS C 9335-1.

6 Classification Classification shall be as stated in clause 6 of JIS C 9335-1 except as follows.


6.1 Addition:


Appliances shall be class 0I, class I, class II or class III as for protection against electric shock.

6.2 Appliances shall be at least IPX4.

7 Marking and instructions Marking and instructions shall be as stated in clause 7 of JIS C 9335-1 except as follows.

7.6 Addition to 7.6 of JIS C 9335-1:

 [symbol 5036 of IEC 60417-1] dangerous voltage

 [symbol 5041 of IEC 60417-1] caution, hot surface

7.10 Addition to 7.10 of JIS C 9335-1:

If the off position is only indicated by letters, the word “off” or the Japanese Kanji character denoting “off” shall be used.

7.12 Addition to 7.12 of JIS C 9335-1:

The instructions for use shall state

- the maximum mass of dry textile material in kilograms to be used in the appliance;
- that the tumble dryer is not to be used if industrial chemicals have been used for cleaning;
- that the lint trap has to be cleaned frequently, if applicable;
- that lint must not to be allowed to accumulate around the tumble dryer (not applicable for appliances intended to be vented to the exterior of the building);
- that adequate ventilation has to be provided of avoid the back flow of gases into the room from appliances burning other fuels, including open fires.

NOTE 101 This instruction is not required if the tumble dryer discharges the air into the room.

If symbols 5036 or 5041 of **IEC 60417-1** are used, their meaning shall be explained.

7.12.1 Addition to 7.12.1 of JIS C 9335-1:

The installation instructions shall state

- for condensation-type tumble dryers intended to be connected to the water mains
 - that the appliance is to be connected of the water mains using a new hose-set and old hose-sets should not be reused;

NOTE 101 This instruction is not required if the hose is permanently attached to the appliance.

- the maximum permissible inlet water pressure, in megapascals;
- the minimum permissible inlet water pressure, in megapascals, if this is necessary for correct operation of the appliance;
- for appliances with ventilation openings in the base, that a carpet must not obstruct the openings;
- that exhaust air must not be discharged into a flue which is used for exhausting fumes from appliances burning as or other fuels.

NOTE 102 This instruction is not required if the tumble dryer discharges the air into the room.

If the installation instructions state that the tumble dryer can be placed on top of a washing machine, they shall state which washing machines are suitable. Instructions shall be given for the assembly of the tumble dryer and washing machine. The instructions shall state how to obtain any fixing attachments required, unless they are supplied with the appliance.

7.14 Addition to 7.14 of JIS C 9335-1:

The height of symbol 5036 of **IEC 60417-1** shall be at least 5 mm and the height of symbol 5041 shall be at least 15 mm.

Compliance is checked by measurement.

7.101 The enclosure of magnetic valves, and similar components incorporated in external hoses for direct connection to the water mains, shall be marked with symbol 5036 of **IEC 60417** if their working voltage exceeds extra-low voltage.

NOTE : This symbol is a warning sign and the rules of **ISO 3864** apply.

Compliance is checked by inspection.

7.102 The rear surface, other than that of fixed appliances, shall be marked with symbol 5041 of **IEC 60417-1** if its temperature rise exceeds the limits specified in **11.8** for accessible front surfaces.

NOTE : This symbol is a warning sign and the rules of **ISO 3864** apply.

Compliance is checked by inspection.

8 Protection against access to live parts Protection against access to live parts shall be as stated in clause 8 of JIS C 9335-1 except as follows.

8.1.1 Addition to 8.1.1 of JIS C 9335-1 is as follows:

NOTE 201 Stationary dryers which also serves as washing machine and exceeds 40 kg when the washing tank is filled with the maximum designed amount of water, are tested without tilting of appliance.

9 Starting of motor-operated appliances Clause 9 of JIS C 9335-1 is not applicable.

10 Power input and current Power input and current shall be as stated in clause 10 of JIS C 9335-1.

11 Heating Heating shall be as stated in clause 11 of JIS C 9335-1 except as follows.

11.2 Addition to 11.2 of JIS C 9335-1:

Lint traps are cleaned and then 50 % of the area of the filter is blocked.

11.3 Addition to 11.3 of JIS C 9335-1:

Temperature rises of the accessible front surface are measured using the probe of figure 101. The probe is applied with a force of $4\text{ N} \pm 1\text{ N}$ to the surface in such a way that the best possible contact between the probe and the surface is ensured.

NOTE 101 Any measuring instrument giving the same results as the probe may be used.

11.7 Replacement of 11.7 of JIS C 9335-1:

Appliances incorporating a timer, a humidity sensing control or other time-limiting control are operated in cycles. Each cycle comprises an operating period having a duration equal to the maximum time that can be provided by the control and a rest period of 4 min during which the appliance is reloaded.

The test may be ended if the temperature rise of any part does not exceed the value determined during the preceding cycle by more than 8 K.

Appliances having a combined washing-drying cycle are operated with the drying programme resulting in the highest temperature rise.

Other appliances are operated continuously until steady conditions are established.

11.8 Addition to 11.8 of JIS C 9335-1:

The temperature rises of the accessible front surface shall not exceed the following values:

— metal and painted metal parts	60 K
— vitreous-enamelled metal parts	65 K
— glass and ceramic parts	65 K
— plastic parts having a thickness exceeding 0.3 mm	80 K

The temperature rise limit of 80 K also applies to plastic material having a metal finish of thickness less than 0.1 mm.

NOTE : When the thickness of the plastic coating does not exceed 0.3 mm, the temperature rise limits of the supporting material applies.

The temperature rises are measured with the door closed.

12 Void

13 Leakage current and electric strength at operating temperature Leakage current and electric strength at operating temperature shall be as stated in clause 13 of JIS C 9335-1 except as follows.

13.2 Modification of 13.2 of JIS C 9335-1:

For stationary class I appliances, the leakage current shall not exceed 3.5 mA, or 1 mA/kW rated power input with a limit of 5 mA, whichever is higher.

14 Transient overvoltages Transient overvoltages shall be as stated in clause 14 of JIS C 9335-1.

15 Moisture resistance Moisture resistance shall be as stated in clause 15 of JIS C 9335-1 except as follows.

15.1 Addition to 15.1 of JIS C 9335-1:

Magnetic valves and similar components incorporated in external hoses for connection to the water mains are subjected to the test specified for IPX7 appliances.

15.2 Modification of 15.2 of JIS C 9335-1:

The test is carried out with the drum filled with wet textile material as specified for normal operation, the mass of the water, however, being approximately 1.5 times the mass of the dry textile material.

Appliances intended to be connected to the water mains are operated with the outlet of the condensation circuit blocked. The inlet valve is held open and the filling continued for 1 min after first evidence of overflow or for 5 min after a protective device operates to stop the flow. Doors are opened but interlocks are not forced.

For appliances having a working surface, 0.5 L of water containing approximately 1 % NaCl and 0.6 % of rinsing agent, as specified in annex AA, is poured over the top of the appliance, the controls being placed in the on position. The controls are then operated through their working range, this operation being repeated after a period of 5 min.

The appliance shall then withstand the electric strength test of 16.3 and inspection shall show that there is no trace of water on insulation that could result in a reduction of clearances and creepage distances below the values specified in clause 29.

16 Leakage current and electric strength Leakage current and electric strength shall be as stated in clause 16 of JIS C 9335-1 except as follows.

16.2 Modification of 16.2 of JIS C 9335-1:

For stationary class I appliances, the leakage current shall not exceed 1 mA, or 1 mA/kW rated power input with a limit of 5 mA, whichever is higher.

17 Overload protection of transformers and associated circuits Overload protection of transformers and associated circuits shall be as stated in clause 17 of JIS C 9335-1.

18 Endurance Clause 18 of JIS C 9335-1 is not applicable.

19 Abnormal operation Abnormal operation shall be as stated in clause 19 of JIS C 9335-1 except as follows.

19.1 Modification of 19.1 of JIS C 9335-1:

Instead of being subjected to the tests of 19.2 and 19.3, appliances are subjected to the tests of 19.101 and 19.102, as applicable.

If operation without water is a more unfavourable condition for appliances connected to the water mains, the tests are carried out with the water valve closed. This valve is not closed after the appliance has started to operate.

19.4 Replacement of 19.4 of JIS C 9335-1:

The appliance is operated under the conditions specified in clause 11 but with dry textile material. Controls that limit the temperature during the test of clause 11 and all self-resetting thermal cut-outs that protect the heating elements are short-circuited simultaneously. The test is terminated at the end of the maximum period allowed by a timer.

For condensation-type tumble dryers, the test is repeated, but the 75 % of the air outlet of the condenser blocked. The test is then carried out again with the air outlet fully blocked.

19.9 Subclause 19.9 of JIS C 9335-1 is not applicable.

19.13 Addition to 19.13 of JIS C 9335-1:

The textile material shall not ignite and shall show no charring or glowing.

NOTE : Light-brown colouring of the textile material or slight emission of smoke is ignored.

19.101 The appliance is operated under the conditions specified in clause 11 but with dry textile material and the drum belt removed. The duration of the test is 90 min or for the maximum period allowed by a timer.

If air circulation is likely to be prevented due to a fault condition, the test is repeated but with the drum belt in position and with the air circulation stopped.

NOTE : Care is to be taken to ensure that the textile material is tumbling properly by reducing the load if necessary.

If both of these conditions are likely to occur simultaneously, the tests are combined.

19.102 Appliances that permit test probe C of **JIS C 0922** to gain access to spaces containing live parts located below holes in the drum are tested for short circuit conditions. The short circuit is applied at the most unfavourable place between live parts and between live parts and other metal parts, if such a short circuit can be made by a pin having a diameter of approximately 1 mm and any length up to 50 mm. The appliance is operated as specified in clause 11 but with dry textile material.

There shall be no risk of fire due to textile material coming into contact with a lamp cover.

Compliance is checked by the following test.

Ten layers of cheesecloth are placed over the lamp cover. The appliance is supplied at rated voltage with the door open until steady conditions are established. The temperature rise of the cover shall not exceed 150 K.

20 Stability and mechanical hazards Stability and mechanical hazards shall be as stated in clause 20 of **JIS C 9335-1** except as follows.

20.1 Modification of 20.1 of JIS C 9335-1:

The test with the angle of inclination increased to 15° is not carried out.

20.101 It shall not be possible to open the door while the appliance is operating unless an interlock is provided that disconnects the motor before the door opening exceeds 75 mm. It shall not be possible to start the motor while the door opening exceeds 75 mm. For appliances with a door opening having a dimension exceeding 30 cm and a drum having a volume exceeding 100 dm³, it shall not be possible to start the motor until a separate means which controls the movement of the drum is operated manually.

Compliance is checked by inspection, by measurement and by manual test, the appliance being supplied at rated voltage and operating under normal operation.

If means to prevent the door opening incorporates a coil or similar component to lock the door in the closed position, the component is energized and de-energized 6 000 times, six times a minute or at the rate imposed by the construction of the appliance if this is lower.

The locking means and its components shall be fit for further use.

NOTE : The door is opened and closed during the test if this is necessary for the mechanical operation of the interlock.

20.102 For appliances with a door opening having a dimension exceeding 30 cm and a drum having a volume exceeding 100 dm³, it shall be possible to open the door from the inside.

Compliance is checked by inspection, by measurement and by applying a force of 70 N perpendicular of the plane of the door at a point furthest from the hinges.

NOTE : The force may be applied to the outside of the door.

20.103 Appliances with horizontally hinged doors shall have adequate stability when the open door is subjected to a load.

Compliance is checked by the following test.

The empty appliance is placed on a horizontal surface and a mass of 23 kg applied to the centre of the open door. The appliance shall not tilt and the door and hinges shall not be damaged to such an extent that compliance with this Standard is impaired.

NOTE 1 Built-in appliances and top-loading appliances are not subjected to this test.

NOTE 2 The test is carried out with the tumble dryer placed on a horizontal surface, even if it can be stacked on top of a washing machine.

21 Mechanical strength Mechanical strength shall be as stated in clause 21 of JIS C 9335-1.

22 Construction Construction shall be as stated in clause 22 of JIS C 9335-1 except as follows.

22.101 Heating elements shall be located or guarded so that they cannot be contacted by textile material.

Compliance is checked by inspection.

22.102 Interlocks shall be constructed so that unexpected operation of the appliance is unlikely to occur while the door is open.

Compliance is checked by inspection and by attempting to release the interlock by means of test probe B of JIS C 0922.

22.103 Condensation-type tumble dryers intended to be connected to the water mains shall withstand the water pressure expected in normal use.

Compliance is checked by connecting the appliance to a water supply having a static pressure equal to twice the maximum permissible inlet water pressure or 1.2 MPa (12 bar), whichever is higher, for a period of 5 min.

There shall be no leakage from any part, including the inlet water hose.

22.104 If the instructions state that the tumble dryer can be placed on top of a washing machine this shall be possible without the tumble dryer tilting or falling. Compliance is checked by inspection and by the following test.

The washing machine and tumble dryer are assembled together in accordance with the instructions. The combination is placed in the most unfavourable orientation on a surface that is inclined at 5° to the horizontal. Each appliance is supplied at rated voltage and operated under normal operation in turn.

The appliances shall not tilt and the tumble dryer shall not fall off the washing machine.

23 Internal wiring Internal wiring shall be as stated in clause 23 of JIS C 9335-1 except as follows.

23.101 The insulation and sheath of internal wiring for the supply of magnetic valves and similar components incorporated in external hoses shall be at least equivalent

to light polyvinyl chloride sheathed flexible cord (cord designation 60227 IEC 52). Compliance is checked by inspection.

NOTE : The mechanical characteristics specified in **JIS C 3662** are not checked.

24 Components Components shall be as stated in clause **24** of **JIS C 9335-1** except as follows.

24.1.4 Addition to **24.1.4** of **JIS C 9335-1**:

The number of cycles of operation for programmers is 3 000.

24.101 Thermal cut-outs incorporated in tumble dryers for compliance with **19.4** shall not be self-resetting.

Compliance is checked by inspection.

25 Supply connection and external flexible cords Supply connection and external flexible cords shall be as stated in clause **25** of **JIS C 9335-1**.

26 Terminals for external conductors Terminals for external conductors shall be as stated in clause **26** of **JIS C 9335-1**.

27 Provision for earthing Provision for earthing shall be as stated in clause **27** of **JIS C 9335-1**.

28 Screws and connections Screws and connections shall be as stated in clause **28** of **JIS C 9335-1**.

29 Clearances, creepage distances and solid insulation Clearances, creepage distances and solid insulation shall be as stated in clause **29** of **JIS C 9335-1** except as follows.

29.2 Addition to **29.2** of **JIS C 9335-1**:

The microenvironment is pollution degree 3, and the insulation shall have a CTI of not less than 250, unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution due to condensation produced by the appliance during normal use.

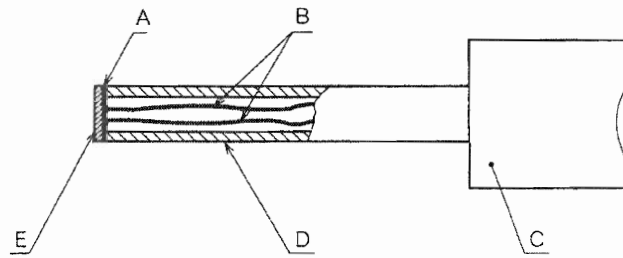
30 Resistance to heat and fire Resistance to heat and fire shall be as stated in clause **30** of **JIS C 9335-1** except as follows.

30.2.2 **30.2.2** of **JIS C 9335-1** is not applicable.

31 Resistance to rusting Resistance to rusting shall be as stated in clause **31** of **JIS C 9335-1**.

32 Radiation, toxicity and similar hazards Radiation, toxicity and similar hazards shall be as stated in clause **32** of **JIS C 9335-1**.

This clause of Part 1 is applicable.



Key

- A Adhesive
- B Thermocouple wires 0.3 mm diameter to **IEC 60584-1** Type K (chrome alumel)
- C Handle arrangement permitting a contact force of $4\text{ N} \pm 1\text{ N}$
- D Polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm
- E Tinned copper disc: 5 mm diameter, 0.5 mm thick

NOTE : The contact face of the disc is to be flat.

Figure 101 Probe for measuring surface temperatures

Annexes

The annexes A to O and annex 1 of **JIS C 9335-1** are applicable except as follows.

Annex AA (normative)

Rinsing agent

The composition of the rinsing agent is as follows.

Substance	Parts by mass %
Plurafac LF 221 ¹⁾	15.0
Cumene sulfonate (40 % solution)	11.5
Citric acid (anhydrous)	3.0
Deionized water	70.5

The rinsing agent has the following properties:

- viscosity 17 mPa·s
- pH 2.2 (1 % in water)

NOTE 1 Any commercially available rinsing agent may be used, but if there is any doubt with regards to the test results, this composition is to be used.

NOTE 2 The composition of the rinsing agent is extracted from **IEC 60436**.

1) Plurafac LF 221 is the trade name of a product supplied by BASF. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by **IEC** and **JIS** of this product.

Annex 1 (informative)

Comparison table between JIS and corresponding International Standard

JIS C 9335-2-11 : 2004 Household and similar electrical appliances—Safety— Part 2-11 : Particular requirements for tumble dryers				ISO 60335-2-11 : 2002 Household and similar electrical appliances—Safety—Part 2-11 : Particular requirements for tumble dryers			
(I) Requirements in JIS		(II) Inter- national Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classifi- cation by clause	Detail of technical deviation	
1 Scope	Safety of electric tumble dryers intended for household and similar purposes, their rated voltage being not more than 250 V for single- phase and 480 V for other appliances	IEC 60335-2-11	1	Identical with JIS.	IDT	—	
2 Normative references	JIS C 9812	IEC 60335-2-11	2		MOD/ addition	JIS C 9812 is added.	Because JIS C 9812 is introduced as a deviation from IEC in 3.1.9.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
3 Definitions	Definition of normal operation The textile material having dimensions approximately 91 cm × 91 cm and a specific mass of 90 g/m ² to 110 g/m ² in dry condition may be used. Definition of tumbler dryers Both of drums which rotate around horizontal axis and that around vertical axis are included.	IEC 60335-2-11	3	Definition of normal operation The textile material consists of cotton sheets having dimensions approximately 70 cm × 70 cm and a specific mass of 140 g/m ² to 175 g/m ² in dry condition. Definition of tumble dryers is same as that of JIS. However drums rotating around vertical axis are not intended.	MOD/ addition	JIS accepts use of textile material stated in JIS C 9812. JIS takes full automatic washers which automatically carry out processes to drying (vertical type) and are sold in Japan into consideration.	In JIS textile material is specified to meet the deviation from IEC (proposal is submitted to IEC). As for vertical type dryers, the purpose of statement is to make them clear.
4 General requirement	Rules for safety	IEC 60335-2-11	4	Identical with JIS.	IDT	—	
5 General conditions for the tests	Test sequence test temperatures, etc.	IEC 60335-2-11	5	Identical with JIS.	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
6 Classification	6.1 As regards classification by protection against electric shock, at least class 0I is required. 6.2 At least IPX4 is required.	IEC 60335-2-11	6	6.1 As regards classification by protection against electric shock, the statement in part 1 is acceptable (class 0 is acceptable). 6.2 Identical with JIS.	MOD/alteration	JIS requires at least class 0I appliance.	This requirement is met to that for washing machines.
7 Marking and instructions	Marking of off position, instructions stating maximum mass of dry textile material and so on, precautions for dryers directly connected to water mains and dryers whose temperature at rear surface becomes high.	IEC 60335-2-11	7	Identical with JIS.	IDT	JIS had added the Japanese Kanji character denoting "off" alternating just "off".	Authorize Japanese indication.
8 Protection against access to live parts	Inspection by test finger and test pin	IEC 60335-2-11	8	Identical with JIS. However, the inspection is made on the bottom face while the appliance is tilted for appliances not exceeding 40 kg in mass.	IDT	In JIS, stationary dryers in which the drying is made in a drum which is also used for washing machine is not tilted if the appliance exceeds 40 kg with the maximum designed amount of water filled in the washing tank.	Dryers which also serve as washing machines shall meet the standard for washing machines. As for problems when IEC Standard is applied, see JIS C 9335-2-7.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
9 Starting of motor-operated appliances	Not applicable	IEC 60335-2-11	9	Identical with JIS.	IDT	—	
10 Power input and current	Marked value of rated power input or rated current, tolerances on measured value, and procedures for measurements	IEC 60335-2-11	10	Identical with JIS.	IDT	—	
11 Heating	Set-up conditions, test duration and points of temperature measurement are specified.	IEC 60335-2-11	11	Identical with JIS.	IDT	—	
12 Void	No specification	IEC 60335-2-11	12	Identical with JIS.	IDT	—	
13 Leakage current and electric strength at operating temperature	Tests for leakage current and dielectric strength under running conditions	IEC 60335-2-11	13	Identical with JIS.	IDT	—	
14 Transient overvoltages	Alternative test by means of impulse test for the part where the specified value of clearance is not satisfied.	IEC 60335-2-11	14	Identical with JIS.	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
15 Moisture resistance	IP test, water spillage test and moisture resistant test	IEC 60335-2-11	15	Identical with JIS .	IDT	—	
16 Leakage current and electric strength	Evaluation of insulation after moisture resistant test	IEC 60335-2-11	16	Identical with JIS .	IDT	—	
17 Overload protection of transformers and associated circuits	Temperature test transformer under simulated overload or short circuit	IEC 60335-2-11	17	Identical with JIS .	IDT	—	
18 Endurance	Not applicable	IEC 60335-2-11	18	Identical with JIS .	IDT	—	
19 Abnormal operation	Limiting of heat dissipation, locking of motor, failure of electronic components, contact of cloth with lamp cover, etc.	IEC 60335-2-11	19	Identical with JIS .	IDT	—	
20 Stability and mechanical hazards	Safety and interlocks	IEC 60335-2-11	20	Identical with JIS .	IDT	—	
21 Mechanical strength	Impact hammer test	IEC 60335-2-11	21	Identical with JIS .	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
22 Construction	Construction in general, hydraulic pressure test, falling of dryer, etc.	IEC 60335-2-11	22	Identical with JIS .	IDT	—	
23 Internal wiring	Flexure of internal wiring, electric strength, internal wiring in hose, etc.	IEC 60335-2-11	23	Identical with JIS .	IDT	—	
24 Components	Thermal cut-outs of non-self-resetting are required. Number of cycles of operation for programmers is 3 000.	IEC 60335-2-11	24	Identical with JIS .	IDT	—	
25 Supply connection and external flexible cords	Types, sectional areas, etc. of supply cord	IEC 60335-2-11	25	Identical with JIS .	IDT	—	
26 Terminals for external conductors	Prevention of loosening of terminal screws, sizes of terminal screws, etc.	IEC 60335-2-11	26	Identical with JIS .	IDT	—	
27 Provision for earthing	Prevention of loosening of earth wire, resistance to corrosion, earth continuity test, etc.	IEC 60335-2-11	27	Identical with JIS .	IDT	—	
28 Screws and connections	Endurance, types, prevention of loosening, etc. of screws	IEC 60335-2-11	28	Identical with JIS .	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
29 Clearances, creepage distances and solid insulation	Clearances, creepage distances and thickness of solid insulation At least pollution degree 3 and CTI250 are required.	IEC 60335-2-11	29	Identical with JIS .	IDT	—	
30 Resistance to heat and fire	Ball pressure test, glow-wire test and needle-flame test	IEC 60335-2-11	30	Identical with JIS .	IDT	—	
31 Resistance to rusting	Protective means against rusting	IEC 60335-2-11	31	Identical with JIS .	IDT	—	
32 Radiation, toxicity and similar hazards	No special statement	IEC 60335-2-11	32	Identical with JIS .	IDT	—	
Annexes	As stated in JIS C 9335-1 .	IEC 60335-2-11	Annexes	Identical with JIS .	IDT	—	
Annex AA	Rinsing agent	IEC 60335-2-11	Annex AA	Identical with JIS .	IDT	—	There is no technical difference, however such caution that JIS also does not endorse particular product is added.

Designated degree of correspondence between **JIS** and International Standard: MOD

- Remarks 1 Symbols in sub-columns of classification by clause in the comparison table indicate as follows:
- IDT: Identical in technical contents.
 - MOD/addition: Adds specification item(s) or content(s) not included in International Standard.
 - MOD/alteration: Alters the specification content(s) included in International Standard.
- 2 Symbol in column of designated degree of correspondence between **JIS** and International Standard in the comparison table indicates as follows:
- MOD: Modifies International Standard.

Reference standards

The reference standards in **JIS C 9335-1** are applicable except as follows.

Addition:

IEC 60436 *Methods for measuring the performance of dishwashers*

IEC 61770 *Electric appliances connected to the water mains—Avoidance of backsiphonage and failure of hose-sets*

ISO 3864 *Safety colours and safety signs*

Errata for JIS (English edition) are printed in *Standardization Journal*, published monthly by the Japanese Standards Association, and also provided to subscribers of JIS (English edition) in *Monthly Information*.

Errata will be provided upon request, please contact:

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